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TITLE: Matrix attachment regions

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CLAIMS:

That which is claimed is:

1. An isolated DNA molecule having a nucleotide sequence selected from the group consisting of:

(a) SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11 and SEQ ID NO:13; and

(b) sequences that hybridize to the isolated DNA of (a) above under conditions represented by a wash stringency of 0.3M NaCl, 0.03M sodium citrate, and 0.1% SDS at 60.degree. C., and which encode a matrix attachment region.

2. A DNA construct comprising:

(a) a transcription initiation region and a structural gene positioned downstream from said transcription initiation region and operatively associated therewith; and

(b) the matrix attachment region according to claim 1 positioned either 5' to said transcription initiation region or 3' to said structural gene.

3. The DNA construct according to claim 2, wherein said matrix attachment region is 5' to said transcription initiation region.

4. The DNA construct according to claim 2, wherein said matrix attachment region is 3' to said structural gene.

5. The DNA construct according to claim 2, further comprising a second matrix attachment region that differs in sequence from said matrix attachment region according to claim 1.

6. A DNA construct comprising:

(a) a transcription initiation region and a structural gene positioned downstream from said transcription initiation region and operatively associated therewith;

(b) a matrix attachment region according to claim 1 positioned either 5' to said transcription initiation region or 3' to said structural gene; and

(c) a second matrix attachment region according to claim 1, wherein said second matrix attachment region is positioned either 5' to said transcription initiation region or 3' to said structural gene.

7. The DNA construct according to claim 2, further comprising a termination sequence positioned downstream from said structural gene and operatively associated therewith.

8. The DNA construct according to claim 6, wherein said first and said second matrix attachment regions differ in sequence.

9. A vector comprising the DNA construct according to claim 2.

10. The vector according to claim 9, wherein said vector is selected from the group consisting of plasmids, viruses, and plant transformation vectors.

11. An in vitro host cell containing the DNA construct according to claim 2.

12. An in vitro host cell according to claim 9, wherein said host cell is an animal cell or a plant cell.

13. A transgenic plant comprising transformed plant cells, said transformed plant cells containing the DNA construct according to claim 2.

14. The transgenic plant according to claim 13, which is a monocot.

15. The transgenic plant according to claim 13, which is a dicot.

16. The transgenic plant according to claim 13, which plant is a dicot selected from the group consisting of tobacco, potato, soybean, peanuts, cotton, and vegetable crops.

17. A DNA construct comprising a transcription initiation region, a structural gene positioned 3' to said transcription initiation region and operatively associated therewith, and a matrix attachment region positioned either 5' to said transcription initiation region or 3' to said structural gene, wherein said matrix attachment region has a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11 and SEQ ID NO:13;

said DNA construct carried by a plant transformation vector.

18. The DNA construct according to claim 17, further comprising a second matrix attachment region that differs in sequence from said matrix attachment region, wherein said second matrix attachment region has a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11 and SEQ ID NO:13.

19. A recombinant tobacco plant comprising transformed tobacco plant cells, said transformed tobacco plant cells containing a heterologous DNA construct comprising a transcription initiation region functional in plant cells, a structural gene positioned 3' to said transcription initiation region and operatively associated therewith, and a matrix attachment region positioned either 5' to said transcription initiation region or 3' to said structural gene,

wherein said matrix attachment region has a sequence selected from the group

consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6,
SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11 and SEQ ID
NO:13.